

REMARKS

This amendment is made in response to the Office Action dated January 30, 2004 (The Office Action). With entry of this amendment, claims 1-12 and 14-23 are pending. In this amendment, claims 12, 14, 15, 17, and 19 are amended and claims 21-23 are newly added. No new matter is entered. Applicants respectfully request reconsideration and allowance of the pending claims in light of the above amendment and the following remarks.

Priority Document Status

The Office Action summary sheet indicates that only some of the certified copies of the priority documents have been received. Applicants' records indicate that this application claims priority from a single Korean Patent Application, 00-37769, a certified copy of which was sent along with the filing papers on July 2, 2001. Applicants would be grateful if the examiner could clarify further which priority documents have not been received by USPTO, or if the summary sheet is in error.

Allowable Subject Matter

Applicants thank the examiner for stating claims 2, 4, 5, 8, 13 and 18-20 contain patentable subject matter. Claim 12 has been amended to include subject matter from previously pending claim 13, which was deemed allowable. New independent claim 21 includes features from claims 1 and 2. New independent claim 22 includes features from claim 4, also deemed allowable. New claim 23 depends from claim 22. It is believed that all of the claims as presently pending are allowable.

Claims

Claimed embodiments of the invention are drawn to a novel and non-obvious memory device. Specifically, claim 1 recites a memory device for use with a memory controller that includes, among other features, a data modifying circuit *distinct* from the memory controller. The data modifying circuit is adapted to, among other functions, write the external depth data in the memory cell array over the internal depth data depending on the result of the comparison. Amended claim 12 recites a method of processing depth data of an object in a memory device controlled by a memory controller that includes, among other features, outputting to the memory controller a status signal indicating that the internal depth data has been modified.

U.S. Patent No. 5,758,045 (“Moon”) was cited as teaching all elements of claim 1. Moon discloses an embodiment having “a color buffer 82 of a frame buffer 80, a Z buffer 81 of a ZDRAM (a DRAM including a Z value comparator) for comparing Z values, and outer-control logic 71 for transferring the result to memory control logic 72 of a control state machine in a raster engine.” See col. 6, lines 26-32 of Moon. Referring to FIG. 8 of Moon, the *outer control logic 71* decodes a write signal and sends it back to the frame buffer 80. Moon has a different structure than embodiments of the invention, and these differences are contained in the claim language. Because of these differences, Moon fails to anticipate or suggest each and every element of claim 1.

FIG. 9 of Moon illustrates some of the differences between it and claim 1. Moon does not disclose or suggest “a data modifying circuit *distinct* from the memory controller, the data modifying circuit adapted to, among other functions, write the external depth data in the memory cell array over the internal depth data depending on the result of comparison.” Instead, in Moon the comparator 81A sends the comparison result to the outer-control logic 71. See Moon FIGs. 8 and 9; col. 7, lines 29-30. Moon’s outer control logic 71 decodes the result and sends it to the memory control logic 72, which generates the write enable signal of the ZDRAM and provides it to Z-Buffer 81. See Moon FIG. 8; col. 7, lines 26-29. In contrast, in the claimed invention the writing function is performed using a data modifying circuit that is distinct from the memory controller, and the data modifying circuit does not send the comparison result to the memory controller to receive a write enable signal.

Thus, Moon fails to disclose or suggest a data modifying circuit *distinct* from the memory controller adapted to, among other functions, “write the external depth data in the memory cell array over the internal depth data depending on the result of the comparison.” Indeed, Moon’s data modifying circuit is in a separate memory controller (outer control logic 71). Consequently, Moon, alone or in combination with other cited art, does not disclose or suggest each and every element of claim 1; thus, Applicants respectfully request allowance of claim 1.

Claims 2-11 depend directly or indirectly from claim 1, and for at least the reasons given for claim 1, these claims are believed to be allowable over the cited references. The Examiner has already indicated allowability of claims 2, 4, 5, and 8. In addition, claim 9 recites a memory device that includes “a *second control pin* for receiving a second control signal from the memory controller, wherein the compare circuit compares the internal depth data with the stored external depth data in units of X bits when *the second control signal is in a non-active state*, and in units of NX bits when *the second control signal is in an active*

state,” as recited in claim 9 of the present application. No mention of a control pin was given with reference to claim 9, and the applicant cannot tell how the cited art was applied to the claims. In that regard, the Examiner has failed to make a prima facie case for a rejection, because it is not shown that the cited art teaches or suggests all the claim limitations; see MPEP 2143 et seq. Claims 10 and 11 depend directly from claim 9, and the rejection also fails to these claims for the above reasons.

The amended claim 12 includes features of claim 13, deemed allowable by the Examiner. Claims 14-20 depend directly or indirectly from this allowable claim and are thus allowable, based on this dependency and based on recitations in the claims themselves.

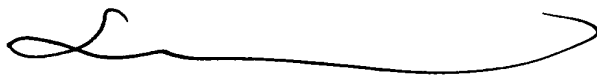
New claims 21-23 contain features already deemed allowable by the Examiner, and thus are believed allowable.

Conclusion

For the foregoing reasons, reconsideration and allowance of claims 1-12 and 14-23 of the application as amended is solicited. The Examiner is encouraged to telephone the undersigned at (503) 222-3613 if it appears that an interview would be helpful in advancing the case.

Respectfully submitted,

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Limited Recognition Under 37 CFR § 10.9(b)

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